

In the Claims:

Claims 1-132 (cancelled).

Claim 133 (new): A method comprising the steps of:

 sending a first signal from an interrogator to a plurality of radio frequency identification (RFID) tags, the first signal including a set of parameters that describe a memory range and a bit string;

 each of the plurality of tags receiving the first signal and comparing the bit string against respective bits stored in the memory range of each respective tag to determine membership in a selected tag population;

 each tag of the selected tag population independently picking a respective first random value from a first range of integers, the respective first random value being associated with a slot in accordance with an inventory process; and

 a first tag of the selected tag population backscattering a first reply to the interrogator, the first reply including a first random number independently generated by the first tag, the first tag replying in accordance with a first sequence determined by the respective first random value independently picked by each tag of the selected tag population.

Claim 134 (New): The method of claim 133, wherein the first random number is 16 bits in length.

Claim 135 (New): The method of claim 133, further comprising the steps of:

 sending a second signal from the interrogator to the plurality of tags;
 each tag of at least a portion of the selected tag population independently picking a respective second random value from a second range of integers in response to the second signal, the respective second random value being associated with a slot in accordance with an inventory process, and the second range of integers being different from the first range of integers; and

 a second tag of the at least a portion of the selected tag population backscattering a second reply to the interrogator, the second reply including a second random number independently generated by the second tag, the second tag replying in accordance with a second sequence determined by the respective second random value independently picked by each tag of the at least a portion of the selected tag population.

Claim 136 (New): The method of claim 135, wherein a difference between the second range of integers and the first range of integers depends, at least in part, on collisions detected by the interrogator.

Claim 137 (New): The method of claim 136, wherein the first random number is 16 bits in length, and the second random number is 16 bits in length.

Claim 138 (New): The method of claim 133, further comprising the step of the interrogator receiving the first reply from the first tag, and, in response thereto, the interrogator sending an acknowledge signal to acknowledge the first tag.

Claim 139 (New): The method of claim 138, further comprising the step of the first tag backscattering an identification number that identifies an object to which the first tag is affixed.

Claim 140 (New): The method of claim 139, further comprising the step of the interrogator accessing the first tag individually after receiving both the first random number and the identification number from the first tag, the step of the interrogator accessing the first tag including the interrogator sending a command that includes a number randomly generated by the first tag that identifies the first tag.

Claim 141 (New): The method of claim 140, wherein the number randomly generated by the first tag that identifies the first tag is the first random number.

Claim 142 (New): The method of claim 133, further comprising the step of the first tag backscattering an identification number, the identification number identifying an object to which the first tag is affixed.

Claim 143 (New): The method of claim 133, wherein the memory range refers to respective bit storage locations contained in each of the plurality of tags.

Claim 144 (New): The method of claim 133, wherein comparing the bit string against the respective bits stored in the memory range of each respective tag of the plurality of tags to determine membership in the selected tag population comprises each and every tag of the plurality of tags determining itself to be a member of the selected tag population if the memory range has a length of 0 bits.

Claim 145 (New): A method comprising the steps of:

sending a first signal from an interrogator to a plurality of radio frequency identification (RFID) tags to select a tag population, the first signal including a set of parameters that describe a memory range and a bit string;

each of the plurality of tags receiving the first signal and comparing the bit string to a respective number contained in respective bit storage locations associated with the memory range within each of the plurality of tags to determine membership in the tag population;

sending a second signal from the interrogator;

each tag of the tag population picking a respective first random value from a first range of integers in response to the second signal, the first range of integers corresponding to a first plurality of slots, and the respective first random value corresponding to a respective first slot of the first plurality of slots, a first sequence in which tags of the tag population are to reply to the interrogator being determined by respective first slots associated with the tag population;

a first tag of the tag population backscattering a first reply to the interrogator, the first reply including a first random number generated by the first tag, the first tag replying in accordance with the first sequence;

the interrogator receiving the first reply from the first tag, and, in response thereto, the interrogator sending an acknowledge signal to acknowledge the first tag;

sending a third signal from the interrogator; and

a second tag of the tag population backscattering a second reply to the interrogator in response to the third signal, the second reply including a second random number generated by the second tag, the second tag replying in accordance with the first sequence.

Claim 146 (New): The method of claim 145, further comprising the interrogator sending a fourth signal after the step of each tag of the tag population picking a respective first random value, wherein the step of the first tag of the tag population backscattering the first reply to the interrogator is performed in response to the fourth signal.

Claim 147 (New): The method of claim 145, further comprising the steps of:

each tag of a portion of the tag population picking a respective second random value from a second range of integers in response to a signal indicating that a number of slots is to be adjusted, the second range of integers corresponding to a second plurality of slots, and the respective second random value corresponding to a respective second slot of the second plurality of slots, a second sequence in which tags are to reply to the interrogator being determined by respective second slots associated with the portion of the tag population; and

a third tag of the portion of the tag population backscattering a third reply to the interrogator, the third reply including a third random number generated by the third tag, the third tag replying in accordance with the second sequence.

Claim 148 (New): The method of claim 147, further comprising the interrogator sending a fifth signal after the step of each tag of the portion of the tag population picking a respective second random value, wherein the step of the third tag of the portion of the tag population backscattering the third reply to the interrogator is performed in response to the fifth signal.

Claim 149 (New): The method of claim 147, wherein a difference between the second range of integers and the first range of integers depends, at least in part, on collisions detected by the interrogator.

Claim 150 (New): The method of claim 145, further comprising the step of the first tag backscattering an identification number that identifies an object to which the first tag is affixed.

Claim 151 (New): The method of claim 150, further comprising the step of the interrogator accessing the first tag individually after receiving both the first random number and the identification number from the first tag, the step of the interrogator accessing the first tag including the step of the interrogator sending a command including a number randomly generated by the first tag to identify the first tag.

Claim 152 (New): The method of claim 151, wherein the number randomly generated by the first tag to identify the first tag is the first random number.

Claim 153 (New): The method of claim 145, further comprising each and every one of the plurality of tags determining itself to be a member of the tag population if the memory range has a length of 0 bits.

Claim 154 (New): The method of claim 153, wherein the first and second random numbers are each 16 bits in length.

Claim 155 (New): A method comprising the steps of:

sending a query command from an interrogator to a plurality of wireless identification devices, the query command including a first set of fields comprising first bit values;

each device of the plurality of devices using the first bit values to determine if the respective device belongs to a group of chosen wireless identification devices that may respond to the query command;

each device of the group of chosen devices picking a respective first random value from a first range of integers in response to the query command, the first range of integers being determined using the first bit values, the respective first random value being associated with a respective slot in accordance with a slotted arbitration scheme;

a first device of the group of chosen devices backscattering a first random number during a first time slot in accordance with the slotted arbitration scheme, the first random number generated by the first device;

sending a subsequent command from the interrogator to the group of chosen devices, the subsequent command including a second set of fields comprising second bit values;

each device of at least a portion of the group of chosen devices picking a respective second random value from a second range of integers in response to the subsequent command, the second range of integers being different from the first range of integers and determined using the second bit values, and the respective second random value being associated with a respective slot in accordance with the slotted arbitration scheme; and

a second device of the at least a portion of the group of chosen devices backscattering a second random number during a second time slot in accordance with the slotted arbitration scheme, the second random number generated by the second device.

Claim 156 (New): The method of claim 155, wherein the first and second random numbers are each 16 bits in length.

Claim 157 (New): The method of claim 155, further comprising the step of the interrogator receiving the first random number from the first device, and, in response thereto, the interrogator sending an acknowledge command to acknowledge the first device.

Claim 158 (New): The method of claim 157, further comprising the step of the first device backscattering a first identification number that identifies a first object to which the first device is affixed.

Claim 159 (New): The method of claim 158, further comprising the step of the interrogator receiving the second random number from the second device, and, in response thereto, the interrogator sending an acknowledge command to acknowledge the second device.

Claim 160 (New): The method of claim 159, further comprising the step of the second device backscattering a second identification number that identifies a second object to which the second device is affixed.

Claim 161 (New): The method of claim 160, further comprising the step of the interrogator transmitting the first random number back to the first device to individually access the first device.

Claim 162 (New): The method of claim 155, wherein the subsequent command is a query command.

Claim 163 (New): A method comprising the steps of:
sending a first signal from an interrogator to first and second radio frequency identification (RFID) tags, the first signal including a bit string and indicating a portion of a memory range, the first tag having stored therein a first set of bits in bit storage locations corresponding to the portion of the memory range, and the second tag having stored therein a second set of bits in bit storage locations corresponding to the portion of the memory range;

the first tag receiving the first signal and comparing the bit string against the first set of bits to determine that the first tag is a member of a group;

the second tag receiving the first signal and comparing the bit string against the second set of bits to determine that the second tag is a member of the group;

sending a query command from the interrogator, the query command including a set of fields to select the first and second tags for response to the query command;

the first tag picking a first random value from a first range of integers in response to the query command, the first random value being associated with a first slot in accordance with an inventory process;

the second tag picking a second random value from the first range of integers in response to the query command, the second random value being associated with a second slot in accordance with the inventory process;

the first tag backscattering a first reply to the interrogator during a first period of time associated with the first slot, the first reply including a first random number generated by the first tag; and

the second tag backscattering a second reply to the interrogator during a second period of time associated with the second slot, the second reply including a second random number generated by the second tag.

Claim 164 (New): The method of claim 163, further comprising the step of the interrogator receiving the first reply from the first tag, and, in response thereto, the interrogator sending an acknowledge signal to acknowledge the first tag.

Claim 165 (New): The method of claim 164, further comprising the step of the first tag backscattering an identification number that identifies an object to which the first tag is affixed.

Claim 166 (New): The method of claim 165, further comprising the step of the interrogator accessing the first tag individually after receiving both the first random number and the identification number from the first tag, the step of the interrogator accessing the first tag including the interrogator sending a command that includes a number randomly generated by the first tag that identifies the first tag.

Claim 167 (New): The method of claim 166, wherein the number randomly generated by the first tag that identifies the first tag is the first random number, and the first random number is 16 bits in length.

Claim 168 (New): The method of claim 166, wherein comparing the bit string against the first set of bits to determine that the first tag is a member of the group and comparing the bit string against the second set of bits to determine that the second tag is a member of the group comprises determining that the first and second tags are members of the group if the memory range has a length of 0 bits.

Claim 169 (New): The method of claim 166, further comprising sending a second signal from the interrogator after the step of the first tag picking the first random value, the first tag backscattering the first reply in response to receiving the second signal.

Claim 170 (New): The method of claim 163, further comprising sending a second signal from the interrogator after the step of the first tag picking the first random value, the first tag backscattering the first reply in response to receiving the second signal.

Claim 171 (New): A method comprising the steps of:
sending a first command from an interrogator to a radio frequency identification (RFID) tag, the first command including a bit string and indicating a memory location, the tag having stored therein an identifier, a portion of the identifier being stored in a location that corresponds to the memory location indicated by the first signal;

the tag comparing the bit string against the portion of the identifier to determine if the tag is a member of a population;

sending a second command from the interrogator;

the tag picking a first random value from a first range of values in response to the second command, the first range of values corresponding to slots in accordance with a slotted anticollision algorithm;

the tag backscattering a self-generated random number during a slot of time that corresponds to the first random value in accordance with the slotted anticollision algorithm;

the interrogator detecting a collision upon receiving the random number;

sending a third command from the interrogator;

the tag picking a second random value from a second range of values different from the first range of values in response to the third command, the second range of values corresponding to slots in accordance with the slotted anticollision algorithm; and

the tag backscattering the random number during a slot of time that corresponds to the second random value in accordance with the slotted anticollision algorithm.

Claim 172 (New): The method of claim 171, further comprising the step of the interrogator receiving the random number from the tag during the slot of time that corresponds to the second random value, and, in response thereto, the interrogator sending a fourth command to acknowledge the tag.

Claim 173 (New): The method of claim 172, further comprising the step of the tag backscattering an identification number that identifies an object to which the tag is affixed.

Claim 174 (New): The method of claim 173, wherein a difference between the first range of values and the second range of values depends on the third command.

Claim 175 (New): The method of claim 171, further comprising the step of the interrogator accessing the tag individually by sending a fourth command that includes the random number.

Claim 176 (New): The method of claim 175, further comprising the step of the tag backscattering an identification number that identifies an object to which the tag is affixed.

Claim 177 (New): The method of claim 176, wherein a difference between the first range of values and the second range of values depends on the third command.

Claim 178 (New): The method of claim 171, further comprising the step of the interrogator receiving the random number from the tag during the slot of time that corresponds to the second random value, and subsequently sending a fourth command to the tag, the fourth command including the random number, the random number being 16 bits in length.

Claim 179 (New): The method of claim 178, further comprising the step of the tag backscattering an identification number that identifies an object to which the tag is affixed.

Claim 180 (New): The method of claim 179, wherein a difference between the first range of values and the second range of values depends on the third command.

Claim 181 (New): The method of claim 171, further comprising the step of the tag backscattering an identification number that identifies an object to which the tag is affixed.

Claim 182 (New): The method of claim 181, wherein a difference between the first range of values and the second range of values depends on the third command.

Claim 183 (New): The method of claim 171, wherein a difference between the first range of values and the second range of values depends on the third command.

Claim 184 (New): The method of claim 183, wherein the difference between the first range of values and the second range of values depends on collisions detected by the interrogator.

Claim 185 (New): The method of claim 171, wherein the identifier is the random number.

Claim 186 (New): A method comprising:
sending a first command from an interrogator, the first command including a first set of parameters;
a first radio frequency identification (RFID) device wirelessly receiving the first command and using the first set of parameters to determine if the first device is a participant that may respond to the first command and also to determine a first range of slots in which the first device may respond in accordance with an arbitration scheme, the first device randomly picking a first slot from the first range of slots;

a second RFID device wirelessly receiving the first command and using the first set of parameters to determine if the second device is a participant that may respond to the first command and also to determine the first range of slots in which the second device may respond in accordance with the arbitration scheme, the second device randomly picking a second slot from the first range of slots;

the first device backscattering a first 16 bit random number during a period of time corresponding to the first slot randomly picked by the first device, the first random number generated by the first device;

sending a second command from the interrogator, the second command including a second set of parameters;

the second device wirelessly receiving the second command and using the second set of parameters not only to determine if the second device is a participant that may respond to the second command but also to determine a second range of slots in which the second device may respond in accordance with the arbitration scheme, the second range of slots being different from the first range of slots, the second device randomly picking a third slot from the second range of slots; and

the second device backscattering a second 16 bit random number during a period of time corresponding to the third slot randomly picked by the second device, the second random number generated by the second device.

Claim 187 (New): The method of claim 186, further comprising the interrogator receiving the first random number from the first device, and responding by sending a third command to acknowledge the first device.

Claim 188 (New): The method of claim 187, further comprising the first device backscattering an identification number that identifies an object to which the first device is affixed.

Claim 189 (New): The method of claim 188, further comprising the interrogator transmitting the first random number back to the first device to individually access the first device.

Claim 190 (New): The method of claim 189, wherein a difference between the first range of slots and the second range of slots is indicated by the second set of parameters of the second command.

Claim 191 (New): The method of claim 186, further comprising the second device backscattering the second random number during a period of time corresponding to the second slot randomly picked by the second device, the first slot being equal to the second slot, and the interrogator detecting a collision between the first and second random numbers before sending the second command.

Claim 192 (New): The method of claim 191, wherein a difference between the first range of slots and the second range of slots depends on collisions detected by the interrogator.

Claim 193 (New): The method of claim 192, wherein the difference between the first range of slots and the second range of slots is indicated by the second set of parameters of the second command.

Claim 194 (New): The method of claim 193, further comprising:
the first device backscattering a first identification number that identifies a first object to which the first device is affixed; and
the second device backscattering a second identification number that identifies a second object to which the second device is affixed.

Claim 195 (New): The method of claim 194, further comprising the interrogator transmitting the first random number back to the first device to individually access the first device.

Claim 196 (New): A method comprising:
generating a random number in a radio frequency identification (RFID) tag;
sending a first query command from an interrogator to the tag, the first query command including a first set of fields;

the tag wirelessly receiving the first query command;

the tag determining, based on at least one field of the first set of fields, if the tag is selected to participate in a slotted anticollision algorithm;

the tag picking a first random value from a first range of integers, the first range of integers being determined using at least one field of the first set of fields, the first random value corresponding to a first slot value in accordance with the slotted anticollision algorithm;

sending a second query command from the interrogator, the second query command including a second set of fields;

the tag wirelessly receiving the second query command;

the tag picking a second random value from a second range of integers, the second range of integers being determined using at least one field of the second set of fields, the second range of integers being different from the first range of integers, the second random value corresponding to a second slot value in accordance with the slotted anticollision algorithm;

the tag backscattering the random number to the interrogator during a period of time associated with the second slot value in accordance with the slotted anticollision algorithm; and

sending an acknowledge command from the interrogator to the tag if the random number is received by the interrogator without detecting a collision.

Claim 197 (New): The method of claim 196, further comprising the tag determining, based on at least one field of the second set of fields, if the tag is a participant that may respond to the second query command.

Claim 198 (New): The method of claim 197, further comprising the tag backscattering an identification number that identifies an object to which the tag is affixed.

Claim 199 (New): The method of claim 198, further comprising the tag backscattering the random number to the interrogator during a period of time associated with the first slot value in accordance with the slotted anticollision algorithm, and the interrogator detecting a collision upon receiving the random number.

Claim 200 (New): The method of claim 199, wherein a difference between the first range of integers and the second range of integers depends on collisions detected by the interrogator.

Claim 201 (New): The method of claim 196, further comprising the tag backscattering the random number to the interrogator during a period of time associated with the first slot value in accordance with the slotted anticollision algorithm.

Claim 202 (New): The method of claim 201, further comprising the interrogator transmitting the random number back to the tag to individually access the tag.

Claim 203 (New): The method of claim 202, further comprising the tag backscattering an identification number that identifies an object to which the tag is affixed.

Claim 204 (New): A method comprising the steps of:

- selecting a radio frequency identification (RFID) tag population based on a portion of a respective identifier stored in each respective tag of the tag population;
- causing each respective tag of the tag population to backscatter a respective, independently generated random number during a respective first time slot randomly picked from a first range of time slots by each respective tag in accordance with a slotted anticollision algorithm;
- causing each respective tag of at least a portion of the tag population to backscatter the respective, independently generated random number during a respective second time slot randomly picked from a second range of time slots by each respective tag of the portion of the tag population in accordance with the slotted anticollision algorithm, wherein the first range of time slots differs from the second range of time slots;

acknowledging each respective tag of the tag population after receiving each respective random number from each respective tag; and

causing each respective tag of the tag population to backscatter a respective identification number that identifies a respective object to which each respective tag is affixed.

Claim 205 (New): The method of claim 204, wherein the slotted anticollision algorithm is adaptive.

Claim 206 (New): The method of claim 205, wherein selecting the RFID tag population selects all RFID tags in a field if the portion of the respective identifier has a length of 0 bits.

Claim 207 (New): The method of claim 206, wherein each respective random number is 16 bits in length.

Claim 208 (New): The method of claim 207, further comprising the step of accessing an individual tag of the tag population including sending to the individual tag the respective random number independently generated by the individual tag.

Claim 209 (New): The method of claim 204, wherein the respective identifier is the respective random number.